

A complete listing of all claims in this application is set forth below.

In the Claims

Please amend claim 1 as set forth below.

A complete listing of all claims in this application is set forth below.

(Currently amended) 1. A communication interface comprising:

a physical layer for communicating data streams between two computers through at least one indicator of a control panel for operating an apparatus;

a framing layer within one of the two computers, the framing layer for communicating data streams with the physical layer and for generating frames having a frame start delimiter and a frame stop delimiter;

a transport layer for verifying frames communicated with the framing layer; and

a dispatch layer for correlating a verified frame with an application executing within the apparatus ~~so that a for~~
communication of the frame may be communicated between the dispatch layer and the correlated application.

(Original) 2. The communication interface of claim 1 wherein the physical layer is a universal asynchronous receiver transmitter (UART) coupled to the at least one indicator lamp to modulate the lamp in accordance with a transmitted data stream.

(Original) 3. The communication interface of claim 1 wherein the framing layer includes a frame character processor.

(Original) 4. The communication interface of claim 1 wherein the frame character processor includes a special character detector and a next character comparator.

(Original) 5. The communication interface of claim 4 wherein the special character detector generates a signal to activate the comparator in response to a special character being detected.

(Original) 6. The communication interface of claim 5, the next character comparator storing one of a single and a double character sequence in a frame buffer in response to the comparison operation.

(Original) 7. The communication interface of claim 6 wherein the next character comparator stores a single character in response to the next character being one of a frame delimiter character and a special character.

(Original) 8. The communication interface of claim 1, the transport layer including a verification code generator to generate a verification code for each frame communicated with the physical layer.

(Original) 9. The communication interface of claim 8, the transport layer including a verification code comparator for comparing a generated verification code with a verification code included in a frame received from the framing layer to verify a received frame.

(Original) 10. The communication interface of claim 9 wherein the verification code generator generates a cyclic redundancy code (CRC) for a received frame and the verification code comparator compares a CRC in a received frame with the generated CRC to verify the received frame.

(Original) 11. The communication interface of claim 1, the transport layer including an expiration timer for timing an interval since the last transmission of a data frame.

(Original) 12. The communication interface of claim 11 wherein the transport layer communicates a message timeout to the dispatch layer in response to the expiration timer expiring before receipt of an acknowledgement message to the last transmitted data frame.

(Original) 13. The communication interface of claim 12, the expiration timer further comprising: a retry counter for counting retransmissions of the last transmitted data frame in response to message timeouts from the expiration timer.

(Original) 14. The communication interface of claim 12 wherein the dispatch layer communicates the message timeout to the application awaiting the response to the communicated frame.

(Original) 15. The communication interface of claim 1 further comprising a sequence number comparator for comparing a sequence number in a frame with a next sequence number.

(Original) 16. The communication interface of claim 15 wherein the transport layer verifies a frame in response to the sequence number in the frame corresponding to the next sequence number.

(Original) 17. The communication interface of claim 15 wherein the transport layer communicates a frame verification message to the dispatch layer in response to the sequence number in the frame corresponding to the next sequence number.

(Original) 18. The communication interface of claim 1, the dispatch layer including a message type comparator for comparing a message type in a verified frame to a plurality of valid message types.

(Original) 19. The communication interface of claim 18, the dispatch layer communicating a verified frame to an application in response to a message type in a verified frame corresponding to one of the message types in the plurality of valid message types.

(Original) 20. The communication interface of claim 1, the dispatch layer including a registered callback function for correlating verified frames to a corresponding application.

(Original) 21. The communication interface of claim 1 further comprising a usage data application for collecting usage data and providing the usage data to the dispatch layer for communication through the interface.

(Original) 22. The communication interface of claim 1 further comprising an identification data application for collecting identification data and providing the identification data to the dispatch layer for communication through the interface.

(Original) 23. The communication interface of claim 1 further comprising:

- an error data memory for storing error data, the error data memory not being initialized during a system reset;
- an operating error detector for detecting a system error; and
- an operating error data application for storing error data in the error data memory in response to the error detector detecting a system error.

(Original) 24. The communication interface of claim 23 wherein the operating error data application communicates error data from the error data memory through the communication interface in response to receipt of a error data retrieval message.

(Original) 25. A method for communicating between two computers comprising:

- communicating data streams between two computers through at least one indicator lamp of a control panel for operating an apparatus;
- generating a frame from one of the data streams, the frame having a frame start delimiter and a frame stop delimiter;
- verifying a frame generated from a data stream; and
- correlating a verified frame with an application executing with the apparatus.

(Original) 26. The communication method of claim 25 wherein the data stream communication includes modulating the indicator lamp in accordance with a transmitted data stream.

(Original) 27. The communication method of claim 25 wherein the frame generation includes processing characters in the frame.

(Original) 28. The communication method of claim 27 wherein the frame character processing includes:

detecting a special character in the frame; and

comparing a next character in the frame to one of a frame delimiter character and a special character.

(Original) 29. The communication method of claim 28 wherein the special character detection includes generating a special character detected signal and the next character comparison occurring in response to the signal.

(Original) 30. The communication method of claim 29 further comprising:

storing one of a single and double character in a frame buffer in response to the comparison of the next character to a frame delimiter.

(Original) 31. The communication method of claim 30 wherein the character storage stores a single character in response to the next character being a frame delimiter character.

(Original) 32. The communication method of claim 25 further comprising:
generating a verification code for each frame.

(Original) 33. The communication method of claim 32 further comprising:
comparing a generated verification code with a verification code in a frame to verify a received frame.

(Original) 34. The communication method of claim 33 wherein the verification code generation includes generating a cyclic redundancy code (CRC) for a received frame and the verification code comparison compares a CRC in a received frame with the generated CRC to verify the received frame.

(Original) 35. The communication method of claim 25 further comprising:
timing an interval since the last transmission of a frame.

(Original) 36. The communication method of claim 35 further comprising:
communicating a message timeout in response to the timed interval exceeding a message timeout threshold.

(Original) 37. The communication method of claim 36, the message timeout communication further comprising:

communicating the message timeout to an application executing within the apparatus that is awaiting a response to the transmitted frame.

(Original) 38. The communication method of claim 25 further comprising:

comparing a sequence number in a frame with a next sequence number.

(Original) 39. The communication method of claim 38 further comprising:

verifying a frame in response to the sequence number in the frame corresponding to the next sequence number.

(Original) 40. The communication method of claim 39 further comprising:

communicating a frame verification message in response to the frame verification.

(Original) 41. The communication method of claim 25 further comprising:

comparing a message type in a verified frame to a plurality of valid message types.

(Original) 42. The communication method of claim 41 further comprising:
communicating a verified frame to an application executing with the
apparatus in response to a message type in a verified frame
corresponding to one of the message types in the plurality of valid
message types.

(Original) 43. The communication method of claim 25 further comprising:
correlating verified frames to a corresponding application that is
executing within the apparatus.

(Original) 44. The communication method of claim 25 further comprising:
collecting usage data; and
communicating the usage data through the indicator lamp.

(Original) 45. The communication method of claim 25 further comprising:
collecting identification data; and
communicating the identification data through the indicator lamp.

(Original) 46. The communication method of claim 25 further comprising:
detecting a system error; and
storing error data in an error data memory that is not
initialized during a system reset in response to detection of a
system error.

(Original) 47. The communication method of claim 25 further comprising:
communicating the stored error data through the indicator lamp in
response to an error data retrieval message.